

King Wong.

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w/ Markush group
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extract
of
Hypericum
perforatum
used to treat
a health disorder

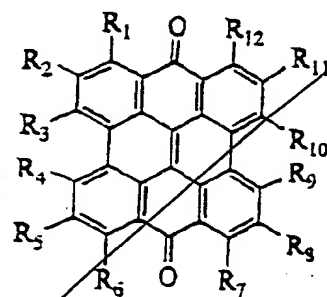
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What is claimed is:

1. A method of treating a health disorder treatable with a T-type calcium channel blocker in an animal in need of such a treatment, comprising administering an effective amount of an active agent to said animal, wherein said active agent is *Hypericum perforatum*, a *Hypericum* extract, an extract of a species of the *Hypericum* genus other than *Hypericum perforatum*, a *Hypericum* constituent, a hypericin derivative or a hypericin analog, with the proviso that when the active agent is *Hypericum perforatum* or *Hypericum* extract, said health disorder is not depression or migraine headache.

2. The method of claim 1, wherein said hypericin derivative is a compound of formula II,



II

wherein

R₁ is H, OH, OR or OCOR;

R₂ is H, R, F, Cl, Br, I or SO₃H;

R₃ is H, R, OH, OR, OCOR, CH₂OH, CH₂OR, CH₂OCOR, COOH or COOR;

R₄ is H, R, OH, OR, OCOR, CH₂OH, CH₂OR, CH₂OCOR, COOH or COOR;

R₅ is H, R, F, Cl, Br, I or SO₃H;

R₆ is H, OH, OR or OCOR;

R₇ is H, OH, OR or OCOR;

R₈ is H, R, F, Cl, Br, I or SO₃H;

R₉ is H, R, OH, OR, OCOR, CH₂OH, CH₂OR, CH₂OCOR, COOH or COOR;

R₁₀ is H, R, OH, OR, OCOR, CH₂OH, CH₂OR, CH₂OCOR, COOH or COOR;

R₁₁ is H, R, F, Cl, Br, I or SO₃H;

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R is an optionally substituted C₁-C₃₀ alkyl group;

5 (A) a compound of formula II, wherein R₁, R₃, R₄, R₆, R₇ and R₁₂ are OH, R₂, R₅, R₈ and R₁₁ are H, and R₉ and R₁₀ are methyl;

(B) a compound of formula II, wherein R₁, R₉, R₁₀, R₆, R₇ and R₁₂ are OH, R₂, R₅, R₈ and R₁₁ are H, and R₃ and R₄ are methyl;

(C) a compound of formula II, wherein R₁, R₃, R₄, R₆, R₇ and R₁₂ are OH, R₂, R₅, R₈ and R₁₁ are H, R₉ is methyl, and R₁₀ is CH₂OH;

10 (D) a compound of formula II, wherein R₁, R₃, R₄, R₆, R₇ and R₁₂ are OH, R₂, R₅, R₈ and R₁₁ are H, R₉ is CH₂OH and R₁₀ is methyl;

(E) a compound of formula II, wherein R₁, R₉, R₁₀, R₆, R₇ and R₁₂ are OH, R₂, R₅, R₈ and R₁₁ are H, R₃ is methyl, and R₄ is CH₂OH; and

15 (F) a compound of formula II, wherein R₁, R₉, R₁₀, R₆, R₇ and R₁₂ are OH, R₂, R₅, R₈ and R₁₁ are H, R₃ is CH₂OH and R₄ is methyl.

3. The method of claim 1, wherein the health disorder treatable with T-type calcium channel blockers is depression, chronic heart failure, congestive heart failure, ischaemic condition, arrhythmia, angina pectoris, hypertension, hypoinsulinemia, hyperinsulinemia, diabetes mellitus, hyperaldosteronemia, epilepsy, migraine-headache, brain aging, a neurodegenerative disease or preterm labor.

4. The method of claim 1, wherein said Hypericum constituent is hypericin, pseudohypericin, hyperforin, ahyperforin, quercetin, quercitrin, isoquercitrin, hyperoside, rutin, amentoflavone or hyperin.

25 5. The method of claim 2, wherein R is a C₁-C₃₀ alkyl group, optionally substituted with one to three substituents independently selected from hydroxy, alkoxy, acyloxy, carboxy, alkoxycarbonyl, amino, alkylamino, dialkylamino, nitro or phenyl group or fluorine, chlorine, bromine or iodine atom.

30 6. The method of claim 5, wherein

R_1 is H, OH, OR or $\text{O} \cdot \text{COR}$;

R₂ is H or R;

R_3 is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

R_4 is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

R_5 is H or R;

R_6 is H, OH, OR or OCOR;

R_7 is H, OH, OR or OCOR;

5 R_8 is H or R;

R_9 is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

R_{10} is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

R_{11} is H or R;

R_{12} is H, OH, OR or OCOR; and

10 R is an optionally substituted C_1 - C_6 alkyl group.

7. The method of claim 6, wherein R is an optionally substituted methyl or ethyl group.

8. The method of claim 1, wherein said animal is a human.

9. The method of claim 1, wherein said active agent is a Hypericum
15 extract.

10. The method of claim 9, wherein said effective amount is about 0.05 mg to 500 mg per kg body weight of said animal.

11. The method of claim 1, wherein said active agent is hypericin.

12. The method of claim 11, wherein said effective amount is about
20 0.0015 mg to 15 mg per kg body weight of said animal.

13. The method of claim 1, further comprising administering to said animal an additional active agent as described in claim 1.

14. The method of claim 13, wherein one of the active agents administered is hypericin.

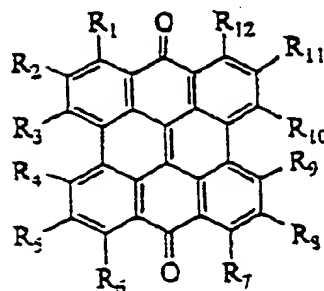
15. The method of claim 14, wherein another of the active agents administered is pseudohypericin.

16. The method of claim 14, wherein another of the active agents administered is hyperforin.

17. The method of claim 15, further comprising administering
30 hyperforin to said animal.

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18. A compound of formula II,



wherein

R_1 is H, OH, OR or OCOR;

R_2 is H, R, F, Cl, Br, I or SO_3H ;

R_3 is H, R, OH, OR, OCOR, CH_2OH , CH_2OR , CH_2OCOR , COOH or COOR;

R_4 is H, R, OH, OR, OCOR, CH_2OH , CH_2OR , CH_2OCOR , COOH or COOR;

R_5 is H, R, F, Cl, Br, I or SO_3H ;

R_6 is H, OH, OR or OCOR;

R_7 is H, OH, OR or OCOR;

R_8 is H, R, F, Cl, Br, I or SO_3H ;

R_9 is H, R, OH, OR, OCOR, CH_2OH , CH_2OR , CH_2OCOR , COOH or COOR;

R_{10} is H, R, OH, OR, OCOR, CH_2OH , CH_2OR , CH_2OCOR , COOH or COOR;

R_{11} is H, R, F, Cl, Br, I or SO_3H ;

R_{12} is H, OH, OR or OCOR; and

R is an optionally substituted $\text{C}_1\text{-C}_{30}$ alkyl group;

with the proviso that the following compounds are excluded

(A) a compound of formula II, wherein R_1 , R_3 , R_4 , R_6 , R_7 and R_{12} are OH, R_2 , R_5 , R_8 and R_{11} are H, and R_9 and R_{10} are methyl;

(B) a compound of formula II, wherein R_1 , R_9 , R_{10} , R_6 , R_7 and R_{12} are OH, R_2 , R_5 , R_8 and R_{11} are H, and R_3 and R_4 are methyl;

(C) a compound of formula II, wherein R_1 , R_3 , R_4 , R_6 , R_7 and R_{12} are OH, R_2 , R_5 , R_8 and R_{11} are H, R_9 is methyl, and R_{10} is CH_2OH ;

(D) a compound of formula II, wherein R_1 , R_3 , R_4 , R_6 , R_7 and R_{12} are OH, R_2 , R_5 , R_8 and R_{11} are H, R_9 is CH_2OH and R_{10} is methyl;

(E) a compound of formula II, wherein R_1 , R_9 , R_{10} , R_6 , R_7 and R_{12} are OH, R_2 , R_5 , R_8 and R_{11} are H, R_3 is methyl, and R_4 is CH_2OH ;

(F) a compound of formula II, wherein R_1 , R_9 , R_{10} , R_6 , R_7 and R_{12} are OH, R_2 , R_5 , R_8 and R_{11} are H, R_3 is CH_2OH and R_4 is methyl.

5 19. The compound of claim 18, wherein R is a C_1 - C_{30} alkyl group, optionally substituted with one to three substituents independently selected from hydroxy, alkoxy, acyloxy, carboxy, akoxycarbonyl, amino, alkylamino, dialkylamino, nitro or phenyl group or fluorine, chlorine, bromine or iodine atom.

10 20. The compound of claim 18, wherein

R_1 is H, OH, OR or OCOR;

R_2 is H or R;

R_3 is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

R_4 is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

15 R_5 is H or R;

R_6 is H, OH, OR or OCOR;

R_7 is H, OH, OR or OCOR;

R_8 is H or R;

R_9 is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

20 R_{10} is H, OH, OR, OCOR, CH_2OH , CH_2OR or CH_2OCOR ;

R_{11} is H or R;

R_{12} is H, OH, OR or OCOR; and

R is an optionally substituted C_1 - C_6 alkyl group.

25 21. The compound of claim 20, wherein R is an optionally substituted methyl or ethyl group

22. The method of claim 1, wherein said extract of a species of the *Hypericum* genus other than *Hypericum perforatum* is an extract of a species selected from the group consisting of *H. majus*, *H. formosum*, *H. calycinum*, *H. X moserianum*, *H. irazuense*, *H. reductum*, *H. patulum*, *H. mutilum*, *H. crux-andreae*, *H. hypericoides*, *H. densiflorum*, *H. prolificum*, *H. frondosum*, *H. cumilicola*, *H. anagalloides*, *H. androsaemum*, *H. tetrapterum*, *H. hirsutum*, *H. olympicum*, *H. hyssopifolium*, *H. elongatum* and *H. erratum*.

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